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UNITED STATES DISTRICT COURT
DISTRICT OF NEW JERSEY

OREXO, AB,	:	
	:	
Plaintiff,	:	Civil Action No.: 11-3788 (FLW)
	:	
v.	:	**OPINION**
	:	
MYLAN PHARMACEUTICAL, INC. and MYLAN INC.,	:	
	:	
Defendants.	:	

WOLFSON, District Judge:

In this claim construction Opinion, the Court construes certain disputed terms in U.S. Patent No. 6,791,910 (the "'910 Patent"), held by Plaintiff Orexo ("Plaintiff" or "Orexo"), which describes an invention for a sublingual method of administrating active pharmaceutical agents. In this infringement suit, Plaintiff accuses Defendants Mylan Pharmaceutical, Inc. and Mylan Inc.[1] of engaging in activities directed toward infringement of the '910 Patent by, inter alia, submitting an abbreviated new drug application designated ANDA seeking FDA approval to manufacture and commercially market its proposed Zolpidem Tartrate Sublingual product. The Court has considered the parties' written submissions and presentations at the Markman hearing, as well as expert declarations. The Court's claim constructions are reflected in the chart located on the last page of this Opinion.

[1] Because the parties refer to these defendants as one entity, the Court will, thus, refer to defendants collectively as "Mylan" or "Defendant."

BACKGROUND

I. Overview of the '910 Patent

Orexo manufactures Edluar, a sublingual tablet for treating insomnia. The active ingredient in Edluar is zolpidem tartrate. Orexo's sublingual drug delivery technology used in Edluar is based on the '910 Patent, the subject of this patent suit. While the invention taught in the '910 Patent is a sublingual pharmaceutical composition to be used in the treatment of acute disorders, such as insomnia, it also teaches a method for making such composition.

The pharmaceutical composition described by the '910 Patent has three main components: (1) microparticles of a pharmaceutically active agent, (2) carrier particles, and (3) a bio/mucoadhesion promoting agent (bio/mucoadhesive). These three components form discrete subunits within the pharmaceutical composition. Markman Hr'g Tr. p.6, ll. 1-2. Once the composition is placed under the tongue, it dissolves into said subunits, and the presence of the bio/mucoadhesive helps the subunits adhere to the mucosal surface under the tongue, allowing for rapid absorption of the pharmaceutical active agent. Id., p. 6, ll. 23-25, p. 7, ll. 1-2.

The objectives of the invention are as follows:

1. To provide for the treatment of acute disorders by perorally administering at least one pharmaceutically active agent in a manner giving rise to pharmacologically effective plasma levels of said agent or agents within a short time after administration.

2. To provide a pharmaceutical composition suitable for that purpose; and to provide a method of making such a composition.

3. To provide a method of manufacture of a medicament for sublingual administration containing a physiologically effective dose of at least one pharmaceutically active compound useful in the treatment of acute disorders.

'910 Patent at col. 2.

II. Specification of the '910 Patent

According to the '910 Patent, the pharmaceutical composition is comprised of an ordered mixture containing a pharmacologically effective amount of at least one pharmaceutically active agent and a bio/mucoadhesion promoting compound. '910 Patent, col. 2, ll. 51-56. The Patent states that it is preferable to formulate such a composition by using the rapidly-dissolving technology taught in European Patent EP, 324 725 ("Nystrom"), which is a disclosed prior art. Id. at col. 3, 26-29. The '910 Patent further teaches that the composition covered by Nystrom is comprised solely of pharmaceutical agents, in a finely dispersed state, covering the surface of a substantially larger carrier particle, and that the composition disintegrates rapidly in water, thereby dispersing the microscopic drug particles or pharmaceutical agents. Id. at col. 3, ll. 32-34. Indeed, according to Nystrom, the dissolution of the drug would take place in the stomach, where there is a relatively large volume of liquid to dissolve the drug particles. Id. at col. 3, 35-42.

In contrast, the '910 Patent allows the drug to dissolve in an environment with a very small amount of water—the mouth. Id. at col. 3, ll. 42-46. In that regard, the '910 Patent teaches that it is possible to use ordered mixtures for sublingual administration, where the volume of liquid available as a solvent is limited to a few milliliters, which, previously, has not been considered a feasible approach. Id. Similarly, the fact that dissolution occurs in the mouth, and not the stomach, allows the '910 patent to be used in conjunction with active agents whose efficacy is negatively affected by dissolution in gastro-intestinal liquids. See Id. at col. 1, ll. 47-56.

An issue that arises with previous methods of sublingual administration is that patients swallow the medication that dissolves in their saliva before the active ingredient adheres to the

mucosa. This can lead to erratic drug absorption. Id. at col. 2, ll. 62-64. To combat this problem, the '910 Patent includes a bio/mucoadhesion promoting agent, which helps the active agent adhere to the mucus membranes. Id. at col. 3, ll. 57-59. According to the Patent, the expression "mucoadhesion" denotes an adhesion to mucous membranes which are covered by mucus, such as those in the oral cavity. Id. at col. 3, ll. 65-67, col. 4, l. 1. Together with its mucoadhesive properties, the bio/mucoadhesive used in the composition may also possess the ability to swell and expand when in contact with water, helping the composition dissolve in the presence of water. Id. at col. 3, ll. 57-63. The Patent additionally provides a list of bio/mucoadhesives known to those skilled in the art; however, said list is non-limiting, and any compound that exhibits bio/mucoadhesive characteristics may be used in the invention. Id. at col. 5., ll. 8-22. In fact, the Patent specifies a method for determining whether a compound has bio/mucoadhesive characteristics in vitro. Id. at col. 5, ll. 24-26.

The bio/mucoadhesive agent can be incorporated into the pharmaceutical composition in several ways. In a preferred embodiment of the invention, a fine particulate quality of the bio/mucoadhesive is mixed together with the coarse carrier for a sufficient time to produce an ordered mixture, where the finer particles exist as discrete primary particles adhered to the surfaces of the carrier particles. Id. at col. 5, ll. 58- 63. This is also the method used for admixing the active agent in Nystrom. Id. at col. 5, ll. 63-65.

In addition to detailing the preferential characteristics and methods of incorporating the bio/mucoadhesive agent, the '910 Patent specification also teaches preferences for the carrier particles and the active agent. For example, the '910 Patent instructs that the carrier particles used in the composition have a preferred size from 50 to 750 μm. Id. at col. 4, l. 28. The carrier particles should also be highly soluble in water and be receptive to the incorporation of a

bio/mucoadhesive agent. Id. at col. 4, ll. 34-37. Like the non-limiting list of bio/mucoadhesives, the '910 Patent delineates potentially useful carrier particles. A similar list is also included for active agents that are well-suited to administration by the invention. Id. at col. 6. As stated, this invention is useful for treating conditions that require rapid and temporary onset of relief, such as pain and insomnia. Id. at col. 6, ll. 33-37.

III. Prosecution History of the '910 Patent

The original application of what would become the '910 Patent was initially rejected by the patent examiner for obviousness in light of the prior art—the Nystrom Patent. See Koutsoubas Decl., Ex. 2 at ORM_00000159. In the original '910 Patent application, the '910 Patent disclosed the following combination of components: MCC (as a bio/mucoadhesive), cross-linked PVP (as the disintegrant), and the carbohydrate (mannitol). See Id. at ORM_00000161. Nystrom also disclosed those three same compounds for use in the Nystrom invention, albeit the functions of the components differed from the '910 Patent. Because of this overlap, however, the examiner rejected the '910 application for obviousness. See Id. In response, the applicants amended the application, removing MCC from the list of possible bio/mucoadhesives. See id. at ORM_0000178. In their amendment, the applicants explained that the inclusion of the MCC in the list of bio/mucoadhesives was an error, see Id. at ORM_0000181, and expressly disclaimed MCC as a bio/mucoadhesive. Eventually, the application was accepted and MCC was not included in the list of bio/mucoadhesives.

IV. Claims at Issue

Terms in Claims 1 and 19 are disputed. The full language of those claims appears below, followed by a list of the disputed terms.

Claim 1: A pharmaceutical composition for the treatment of acute disorders by sublingual administration, comprising an essentially water-free, ordered mixture of microparticles of at least one pharmaceutically active agent adhered to the surfaces of carrier particles, said particles being substantially larger than said microparticles and being water-soluble, and a bioadhesion and/or mucoadhesion promoting agent mainly adhered to the surfaces of the carrier particles.

Claim 19: A method for the treatment of acute disorders, wherein to an individual afflicted with said disorder is administered sublingually at least one dose unit of an essentially water-free pharmaceutical composition containing an effective amount of at least one pharmaceutically active agent in the form of microparticles adhered to the surfaces of carrier particles, which are substantially larger than said microparticles, and are essentially water-soluble, and a bioadhesion and/or mucoadhesion promoting agent.

Id., col. 10.

Disputed claim terms:

A. "Essentially water-free" (claims 1 and 19)

B. "Bioadhesion and/or mucoadhesion promoting agent" (claims 1 and 19).

C. "Ordered mixture" (claim 1)

D. "Microparticles of at least one pharmaceutically active agent" (claims 1 and 19).

E. "Adhered to the surfaces" (claims 1 and 19).

F. "Substantially larger" (claims 1 and 19).

G. "Treatment" (claims 1 and 19).

H. "Effective amount" (claim 19).

On the next page, the Chart represents the parties' respective proposed constructions for each of the disputed terms.

Disputed Claims	Orexo's Construction	Mylan's Construction
Essentially water-free	A water content that does not prevent the bio/mucoadhesion promoting properties in a pharmaceutical composition for sublingual administration.	No water is intentionally added during the manufacturing process.
Bioadhesion and/or mucoadhesion Promoting agent	A material that enables adhesion of an active agent(s) to oral mucous membranes, oral mucosa or oral biological surfaces. Microcrystalline Cellulose ("MCC") is not a bioadhesion and/or mucoadhesion promoting agent.	A substance that is effective in making the active agent adhere to the oral mucosa. For the '910 Patent, neither microcrystalline cellulose nor **cross-linked polyvinylpyrrolidone** is such an agent.
Microparticles of at least one pharmaceutically active agent	A drug, in particulate form that is used for the treatment of medical conditions. Pharmaceutically active agent includes zolpidem and its pharmacologically acceptable salts and specifically zolpidem tartrate.	Particles of the pharmaceutically active agent have a particle size no greater than about 24 microns.
Adhere to the surfaces	Active agent held at the outside part or layer of carrier particles.	Binding to the surfaces
Substantially larger	Carrier particles are appreciably larger than the microparticles of the pharmaceutically active ingredient.	Substantially greater than 24 microns.
Ordered mixture	The particles of at least one material distributed fairly evenly on carrier particles.	A mixture of carrier particles and adherent particles of an active pharmaceutical agent.
Treatment	The application of medicines, surgery, psychotherapy, etc., to a patient or to a disease or symptom.	Control [the acute disorder]
Effective amount	An amount that elicits a therapeutic response	The amount of active agent sufficient for treatment of an acute disorder is in the form of microparticles

DISCUSSION

I. Standard of Review

Claims define the scope of the inventor's right to exclude. Phillips v. AWH Corp., 415 F.3d 1303, 1312 (Fed. Cir. 2005). Claim construction determines the correct claim scope, and is a determination exclusively for the court as a matter of law. Markman v. Westview Instruments, Inc., 52 F.3d 967, 978–79 (Fed. Cir. 1995) (en banc). Indeed, the court can only interpret claims, and "can neither broaden nor narrow claims to give the patentee something different than what it has set forth" in the specification. E.I. Du Pont de Nemours v. Phillips Petroleum Co., 849 F.2d 1430, 1433 (Fed. Cir.1 988).

This interpretive analysis begins with the language of the claims, which is to be read and understood as it would be by a person of ordinary skill in the art. Dow Chem. Co. v. Sumitomo Chem. Co., 257 F.3d 1364, 1372 (Fed. Cir. 2001); see also Markman, 52 F.3d at 986 ("The focus [in construing disputed terms in claim language] is on the objective test of what one of ordinary skill in the art at the time of invention would have understood the terms to mean"); Phillips, 415 F.3d at 1312–13. In construing the claims, the court may examine both intrinsic evidence (e.g., the patent, its claims, the specification, and prosecution history) and extrinsic evidence (e.g., expert reports, testimony, and anything else). Pitney Bowes, Inc. v. Hewlett–Packard Co., 182 F.3d 1298, 1309 (Fed. Cir. 1999). Courts first look to intrinsic evidence when interpreting disputed terms. Vitronics Corp. v. Conceptronic, Inc., 90 F.3d 1576, 1582 (Fed .Cir. 1996). Generally, words in patent claims are given their "ordinary and accustomed meaning as understood by one of ordinary skill in the art" at the priority date of the patent application. Dow Chem., 257 F.3d at 1372; K–2 Corp. v. Salomon S.A., 191 F.3d 1356, 1362 (Fed. Cir. 1999). The claims must be construed objectively in the context of both the particular claim and the

entire patent because "the claims themselves provide substantial guidance as to the meaning of particular claim terms," and claim terms are normally used consistently throughout the patent. Phillips, 415 F.3d at 1313–14.

Moreover, courts are instructed to look to the specification, which is a written description of the invention. "[C]laims 'must be read in view of the specification, of which they are a part.' " Id. at 1315 (quoting Markman, 52 F.3d at 979). Indeed, the specification is perhaps "the single best guide to the meaning of a claim term" due to its statutory requirements of being in "full, clear, concise, and exact terms." Id. at 1316; see 35 U.S.C. § 112. "The specification acts as a dictionary when it expressly" or implicitly defines terms used in the claims. Markman, 52 F.3d at 979. Thus, it effectively limits the scope of the claim. On Demand Mach. Corp. v. Ingram Industries, Inc., 442 F.3d 1331, 1340 (Fed.Cir.2006). Due to its nature, "the specification 'is always highly relevant to the claim construction analysis. Usually it is dispositive.' " Id. (quoting Vitronics Corp., 90 F.3d at 1582).

Extrinsic evidence includes all evidence external to the patent and prosecution history, i.e., expert and inventor testimonies, dictionaries, and learned treaties. Markman, 52 F.3d at 980. It is considered supplemental to the intrinsic evidence when ambiguities remain. See Vitronics, 90 F.3d at 1583; Johnson Worldwide Assocs. v. Zebco Corp., 175 F.3d 985, 989 (Fed. Cir. 1999). Yet, extrinsic evidence cannot be used to vary or contradict claim terms when their meanings are discernible from intrinsic evidence. C.R. Bird, Inc. v. U.S. Surgical Corp., 388 F.3d 858, 862 (Fed. Cir. 2004).

II. Disputed Terms

A. Essentially Water-Free

The parties dispute whether "essentially water-free" refers to the final pharmaceutical formulation or the process by which the formulation is made. Plaintiff proposes that "essentially water-free" means "a water content that does not prevent the bio/mucoadhesion promoting properties in a pharmaceutical composition for sublingual administration." Defendant, on the other hand, contends that "essentially water-free" should be construed as "no water is intentionally added during the manufacturing process." Thus, both parties acknowledge that there may be some water present in the pharmaceutical composition,[2] but they disagree as to whether the term "essentially water-free" applies to the final product or the process by which that product is manufactured.

Defendant premises its argument on this notion: what is destroyed by water cannot be made with water. In that regard, Defendant reasons that because water interferes with the advantageous characteristics of the invention, there is no feasible way to create the invention by using water. To support its construction, Defendant references a passage from the '910 patent, which states:

> Irrespective of the form given to the preparation, it is important that the preparation is essentially free from water, since its bio/mucoadhesion promoting character results from its practically instantaneous hydration when brought into contact with water or saliva. Premature hydration would drastically decrease the

[2] Indeed, as a general principle for claim construction, "essentially" refers to a lack of a strict numerical limitation. See Edelstein v. Frank, 52 F.3d 1035, 1039-40 (Fed. Cir. 1995). Consequently, "essentially water-free" cannot mean that the composition is entirely free from water because that imposes a stringent limitation on the claims, and it would render "essentially" meaningless. In fact, Defendant proposed several constructions during the parties' prehearing proceedings, some of which included language that "the ordered mixture contains so little water that there is no premature hydration of the bioadhesion and/or mucoadhesion promoting agent." Def. ['s] Responding Claim Construction Br. 14.

> mucoadhesion promoting properties and result in a premature dissolution of the active substance.

'910 Patent, col. 7, ll. 36-43. From this excerpt, Defendant concludes that the "premature hydration" warned by the specification can only be avoided if there is no water added during manufacturing. However, in quoting the above passage, Defendant neglects to include the immediately preceding sentence which reads: "The ordered mixture prepared in accordance with the invention can be incorporated into various kinds of pharmaceutical preparations intended for sublingual administration." '910 Patent, col. 7, ll. 33-36. When read together, it becomes clear, in this Court's view, that the term "preparation" is describing a pharmaceutical product, not a method of manufacture. Indeed, one of the definitions of "preparation" is, "something that is prepared; specifically: a medicinal substance made ready for use." *Preparation definition*, Merriam-Webster.com, http://www.merriam-webster.com/dictionary/preparation. Thus, the passage only describes the characteristics of the pharmaceutical substance or composition -- which would be essentially water-free -- and based on the plain language, the passage is silent on how that substance is made.

Defendant also supports its construction with language from the Nystrom Patent, contending that "essentially free from water," as used in the prior art, has the same meaning as "essentially water-free." While the Court acknowledges that this language is interchangeable, the Court does not find that the language of the prior art supports Defendant's construction that preparation refers to a process. Mirroring the language of the '910 Patent, the prior art states:

> The ordered mixtures prepared in accordance with the invention can be incorporated in various kinds of pharmaceutical preparations. . . . Irrespective of the form given to the preparation, it is important that the preparation is essentially free from water, since the presence of water would result in premature dissolution of the active substance.

Nystrom Patent col. 4-5, ll. 55-57, 65; 1-4 (emphasis added). Again, the word "preparation" in the above-quoted passage refers to a final pharmaceutical product. This passage teaches that the final pharmaceutical product is essentially free from water and, similar to the '910 Patent passage relied upon by Defendant in this context, is silent as to the method of manufacture.

Next, Defendant argues that when a process step is fundamental to the final product, a product claim can be limited by its method of manufacture. According to Defendant, prior case law allows such a limitation. See, e.g., Andersen Corp. v. Fiber Composites, LLC 474 F.3d 1361, 1375 (Fed. Cir. 2007) ("However, process steps can be treated as part of a product claim if the patentee has made clear that the process steps are an essential part of the claimed invention."). Defendant points to the portions of the preferred embodiments of the '910 Patent that describe three water-free methods of producing the invention. The first is the "dry mixing" method of producing the ordered mixtures described in Nystrom. See '910 Patent col. 3, ll. 26-34. The second and third methods specify that a liquid can be used during the manufacturing of the composition, but it cannot be one that will cause the bio/mucoadhesive to swell. See '910 Patent col. 6 ll. 6-9; 15-16.

In general, however, the scope of a product claim is not restricted to the process by which it is made. See Vanguard Prods. Corp. v. Parker Hannifin Corp., 234 F.3d 1370, 1372 (Fed. Cir. 2000). While there are exceptions to this tenet, neither the language of the '910 Patent nor the prosecution history supports the idea that this invention must be limited to a water-free manufacturing process. The prior cases that have allowed for this kind of limitation have done so because the patentee specifically limited its own claims during the prosecution history. See Id. For example, in Southwall Technologies, Inc. v. Cardinal IG Co., a product claim was limited to a particular process because the patentee had specifically restricted its claim to a

method of manufacture in order to avoid rejection for obviousness. 54 F.3d 1570, 1576 (Fed. Cir. 1995). Here, the patentee never specifically disavowed methods of manufacture that utilize water in the '910 Patent application. And, a patentee is not required to specify every possible method of producing its invention. SRI Int'l v. Matsushita Elec. Corp. of Am., 77 F.2d 1107, 1121 (Fed. Cir. 1985). In fact, immediately following the embodiments cited by Defendant, the '910 Patent explicitly states that there are other feasible methods of preparation that are not described in the specification. See '910 Patent col. 6, ll. 18-19. Also, as a preamble to the claims, the Patent explicitly states that only the claims, not the embodiments and examples, are limiting, and that it is possible to vary from the specification "without departing from the inventive idea." Id. at col. 10, ll. 36-41. Accordingly, absent any clear and unambiguous disclaimer, the preferred embodiments are not dispositive of a manufacturing process that does not include water.

Defendant additionally points to the prosecution history as intrinsic evidence supporting its contention. Specifically, Defendant cites an excerpt from a previous claim rejection of the '910 Patent where the patent examiner stated that "[t]he composition is an ordered mixture of microparticles that is free of water." Koutsoubas Decl., Ex. 2 at ORM_00000159 (Sept. 26, 2002 Office Action at 4-5). In addition, the examiner said, "[t]he most important aspect of the invention is the fact that the compound remains water-free so that the active agents do not dissolve too quickly." Id. at ORM_00000160. From these statements, Defendant concludes that the examiner was under the impression that the composition must remain completely free of water throughout the process, even though the claim language inserts "essentially" before "water-free." First and foremost, the language cited by Defendant is consistent with Plaintiff's

construction; like the passage Defendant cited from the '910 Patent, this language refers to the final pharmaceutical composition and not the manufacturing process.

Having found that the term "essentially water-free" describes the final composition, the Court must accept a construction that elucidates the meaning of "essentially water-free" in that light. Plaintiff's proposed construction – "A water content that does not prevent the bio/mucoadhesion promoting properties in a pharmaceutical composition for sublingual administration" – accomplishes that goal. As referenced previously, for the purposes of claim construction, the use of "essentially" indicates that there is no fixed numerical limitation to the terms described thereby. See Edelstein, 52 F.3d at 1039. Plaintiff's construction contains no numerical limitation; instead, it introduces a certain threshold for the level of water that can be present in a pharmaceutical composition covered by Claims 1 and 19. The construction indicates a likelihood that some water may be present in the pharmaceutical composition, whether the water comes from ambient moisture or is introduced along with the excipients. See Peppas Decl. ¶ 35.

As previously mentioned, the '910 Patent warns that "premature hydration" will interfere with the bio/mucoadhesive properties of the preparation. See '910 Patent, col. 7, ll. 40-43. Considering that the hallmark of the invention is, in fact, its bio/mucoadhesive characteristics, while there could potentially be some water in the preparation, it cannot be of an amount that would destroy those essential properties. Therefore, Plaintiff's construction addresses the inherent limitations of the invention without reading a process limitation into a product claim. As such, the Court accepts Plaintiff's construction of "essentially water-free": "A water content that does not prevent the bio/mucoadhesion promoting properties in a pharmaceutical composition for sublingual administration."

B. Bioadhesion and/or Mucoadhesion Promoting Agent

As to this claim, both parties agree that a bioadhesion and/or mucoadhesion promoting agent helps the active agent adhere to the oral mucosa. There are a few semantic differences between the two proposed constructions, but in essence, the first portion of each of the parties' proposals conveys the same idea. Plaintiff proposes "a material that enables adhesion of an active agent(s) to oral mucous membranes, oral mucosa, or oral biological surfaces." Tracking the language of the '910 Patent, Defendant proposes "a substance that is effective in making the active agent adhere to the oral mucosa" to describe the functional characteristics of the bio/mucoadhesive. Indeed, Defendant's proposed language comes directly from the '910 Patent specification: "The bioadhesion and/or mucoadhesion promoting agent is effective in making the active agent or agents adhere to the oral mucosa . . ." '910 Patent, col. 3, ll. 57-59 (emphasis added). I agree that the term "promoting agent" need not be further construed, particularly since it is clear from the claim language and the specification what that term means. I adopt Defendant's construction.

Additionally, the parties agree that, for purposes of the '910 Patent, Microcrystalline Cellulose ("MCC") is not a bio/mucoadhesive because it was expressly disclaimed during the prosecution history. The parties' dispute relating to the definition of "bioadhesion and/or mucoadhesion promoting agent" is whether cross-linked polyvinylpyrrolidone ("cross-linked PVP") was also disclaimed or disavowed as a bio/mucoadhesive. Plaintiff proposes that MCC is the only compound expressly disclaimed as a bio/mucoadhesive, while Defendant contends that both MCC and cross-linked PVP were disclaimed. In that connection, Plaintiff's full construction for the term "bioadhesion and/or mucoadhesion promoting agent" is: "a material that enables adhesion of an active agent(s) to oral mucous membranes, oral mucosa or oral

biological surfaces. Microcrystalline Cellulose ("MCC") is not a bioadhesion and/or mucoadhesion promoting agent." On the other hand, Defendant's construction is: "a substance that is effective in making the active agent adhere to the oral mucosa. For the '910 Patent, neither microcrystalline cellulose nor cross-linked polyvinylpyrrolidone is such an agent" (emphasis added).

Defendant primarily relies on the prosecution history to support its construction. During the prosecution of the '910 Patent, the '910 application was rejected for obviousness in light of the fact that the Nystrom Patent, a prior art, disclosed the same combination of substances, i.e., MCC, cross-linked PVP and mannitol. To cure this defect, the '910 applicant removed MCC from the list of possible bio/mucoadhesive agents. See supra, Background, Sec. III. In so doing, the applicants attempted to distinguish the '910 application from Nystrom by stating:

> Moreover, applicants note that NYSTROM fails to mention muco- or bioadhesive components. In fact, NYSTROM fails to disclose or suggest a combination of ordered mixtures and mucoadhesive agents. Moreover, applicants note that one of ordinary skill in the art would appreciate that microcrystalline cellulose does not exhibit bio/mucoadhesive properties. While it is true that this is stated in the specification and claims, applicants have amended claims and specification to correct this obvious error.

Koutsoubas Decl., Ex. 2 at ORM_00000181 (Feb. 23, 2003 Amendment, p. 6) (emphasis added). See Nystrom Patent, col. 3, ll. 17-18. Unpersuasively, Defendant argues that this statement not only disavows MCC, but also cross-linked PVP as bio/mucoadhesive agents. According to Defendant, the above underlined statement cannot be true if cross-linked PVP is a bio/mucoadhesive in the '910 Patent because it was disclosed in Nystrom, albeit as a disintegrant. Indeed, cross-linked PVP was disclosed as a disintegrant in Nystrom in the following passage:

> The pharmaceutical disintegrant may comprise any substance which is known for this purpose by those skilled in the art. Particularly effective agents in this respect

> are those which swell drastically in water, through hydratization, and thus exhibit an increase in volume of up to 10-20 times their dry volume. Examples of such agents are cellulose and starch derivatives in the form of water-insoluble, cross-linked polymers which swell markedly in water. Derivatives of polyvinylpyrrolidone are other examples of such agents.

Nystrom Patent, col. 3, ll. 8-18 (emphasis added). As such, Defendant reasons that because both MCC and cross-linked PVP are disclosed in the Nystrom Patent – albeit as disntegrants -- they should nonetheless be excluded from the possible bio/mucoadhesives that could be used in the '910 Patent.

In response to Defendant's argument, Plaintiff claims that the disputed passage was a general statement, based on the fact that the Nystrom Patent does not address whether any of the materials disclosed in that patent can function as a bio/mucoadhesive. Indeed, the Nystrom language does not include the term "bioadhesion and/or mucoadhesion promoting agent" or anything similar in its specification or claims. Therefore, the applicants' statement seemingly explains such a distinction between the Nystrom Patent and the '910 Patent.

However, Defendant argues that even though Nystrom never referred to MCC as a bio/mucoadhesive, nonetheless the patent examiner still rejected the patent for obviousness because Nystrom disclosed MCC. Defendant further argues that, regardless of whether it was specifically noted in the patent, if MCC can function as a bio/mucoadhesive, then it is immaterial whether it was categorized as such in Nystrom. See In re Kao, 639 F.3d 1057, 1066 ("Thus, while it matters not whether the hypothetical skilled artisan would have appreciated the 'correlation' at issue here, it matters greatly whether anything the skilled artisan would be prompted by the prior art to do is in fact within the scope of the pending claim"). Defendant extends this line of reasoning to cross-linked PVP; however, that interpretation is incongruous with the specification and embodiments of the '910 Patent because, if the Court were to apply

such an interpretation, it would result in a disclaimer that essentially encompasses all the compounds disclosed in the Nystrom Patent.

To illustrate, in addition to disclosing MCC and cross-linked PVP as disintegrants, Nystrom also discloses Ac-Di-Sol, which is a commercial form of cellulose gum. See Nystrom Patent, col. 3, ll. 18-22. In the '910 Patent, Ac-Di-Sol is categorized as both a bio/mucoadhesive and a disintegrant. See '910 Patent col. 5, ll. 41-42; col. 7, ll. 20-24. It is also utilized in both embodiments of the '910 Patent, serving the dual function of bio/mucoadhesive and disintegrant. See '910 Patent col. 8, ll. 6-7; col. 8, ll. 34-36. Applying Defendant's reasoning would result in the disavowal of Ac-Di-Sol. Considering that Ac-Di-Sol is employed in every preferred embodiment of the '910 Patent, it would be illogical to adopt Defendant's interpretation of the prosecution history in this regard.[3]

Defendant also contends that the intrinsic evidence concerning MCC and cross-linked PVP is so similar that the disavowal of MCC during the prosecution history should also apply to cross-linked PVP. Defendant identifies three similarities between the intrinsic evidence relating to MCC and cross-linked PVP: (1) both were disclosed in Nystrom; (2) both were noted in the examiner's rejection; (3) both materials are listed only as disintegrants. Nevertheless, these similarities are not sufficient to result in the disavowal of cross-linked PVP. Indeed, there is a "heavy presumption that claim terms carry their full ordinary and customary meaning, unless . . .

[3] Defendant claims that the intrinsic evidence concerning Ac-Di-Sol and cross-linked PVP is different, and thus, cross-linked PVP can be disavowed without disavowing Ac-Di-Sol. According to Defendant, the statement made by the applicants in response to the examiner's initial rejection for obviousness should not apply to Ac-Di-Sol because Ac-Di-Sol was never referenced in that rejection. In other words, it is Defendant's position that, because the examiner's statement only referenced MCC and cross-linked PVP, any disavowal would only apply to those substances. Contrary to Defendant's assertion, the applicants' response referred to the entire Nystrom Patent, not merely the substances listed in the rejection. Koutsoubas Decl., Ex. 2 at ORM_00000181 (Feb. 23, 2003 Amendment, p. 6) ("In fact, NYSTROM fails to disclose or suggest a combination of ordered mixtures and mucoadhesive agents").

the patentee expressly relinquished claim scope." Epistar Corp. v. Int'l Trade Comm'n, 566 F.3d 1321, 1335 (Fed. Cir. 2009). Therefore, "bioadhesion and/or mucoadhesion promoting agent" encompasses "any physiologically acceptable agent showing bio/mucoadhesive characteristics" ('910 Patent, col. 5, ll. 21-23), absent a clear relinquishment of scope. In that regard, here, similarities between MCC and cross-linked PVP do not rise to the level of a clear relinquishment. First, the fact that both materials were disclosed in Nystrom as disintegrants has little relation to whether either is a bio/mucoadhesive in the context of the '910 Patent. Again, for example, Ac-Di-Sol was also disclosed as a disintegrant in Nystrom, yet, Defendant has not argued that Ac-Di-Sol is not a bio/mucoadhesive in the context of the '910 Patent. Second, while both agents were discussed in the examiner's rejection, the examiner did not treat MCC and PVP as similar substances; rather, the examiner referenced cross-linked PVP as a disintegrant, and MCC as a bio/mucoadhesive. Finally, the '910 Patent states that there is an overlap between the disintegrating agents and the bio/mucoadhesives, and the two functions may be served by the same material. See '910 Patent, col. 7, ll. 25-28. While Defendant is correct in noting that the two categories are not necessarily equivalent, see Id., col. 7, ll. 29-32, that fact does not preclude cross-linked PVP from qualifying as a bio/mucoadhesive.[4]

I further note that the inclusion of MCC on the list of bio/mucoadhesives in the initial patent application was admittedly an error, which is why the applicants removed only MCC from the list, and the examiner found that to be acceptable. See Koutsoubas Decl., Ex. 2 at ORM_00000181 (Feb. 23, 2003 Amendment, p. 6) ("Moreover, applicants note that one of ordinary skill in the art would appreciate that microcrystalline cellulose does not exhibit

[4] Whether cross-linked PVP is actually a bio/mucoadhesive is not being addressed at this stage of the proceedings.

bio/mucoadhesive properties. While it is true that this is stated in the specification and claims, applicants have amended claims and specification to correct this obvious error"). Indeed, had this error not been committed in the early application, Defendant would likely not be putting forth the same argument.

In conclusion, while the applicants expressly disclaimed MCC as a bio/mucoadhesive, there is no equivalent disavowal for cross-linked PVP. Accordingly, Defendant attempts to build a case for disavowal of cross-linked PVP by piecing together statements from the prosecution history. The law, however, requires more concrete evidence of a disavowal than Defendant has provided. In fact, the Federal Circuit has found it "particularly important not to limit claim scope passed on statements made during prosecution '[a]bsent a clear disavowal or contrary definition." Digital-Vending Services Intern., LLC v. University of Phoenix, Inc., 672 F.3d 1270, 1273 (Fed. Cir. 2012) (citing August Tech. Corp. v. Camtek, Ltd., 655 F.3d 1278, 1286 (Fed. Cir. 2011) (quoting Home Diagnostics, Inc. v. LifeScan, Inc., 381 F.3d 1352, 1358 (Fed. Cir. 2004)). No such "clear disavowal or contrary definition" exists in the prosecution history regarding cross-linked PVP as a bio/mucoadhesive. Moreover, the specification of the '910 Patent makes clear that the list of bio/mucoadhesives is non-exhaustive. See '910 Patent, col. 5, ll. 21-23. In fact, after the exemplary list of bio/mucoadhesive agents, the specification states: "[m]ore generally, any physiologically acceptable agent showing bio/mucoadhesive characteristics may be used successfully to be incorporated in the carrier." '910 Patent, col. 5, ll. 21-23 (emphasis added). The specification further details a method for determining whether a compound has bio/mucoadhesive characteristics in vitro. See '910 Patent, col. 5, ll. 23-25. There would be no need to include a method for determining the mucoadhesive characteristics of

a compound if the patent is restricted to the bio/mucoadhesives listed in the specification.[5] Indeed, Defendant recognizes that this is not a "classic disavowal," Markman Hr'g Trans. p. 62, l. 19, but a "classic disavowal" is exactly what the law requires. See Storage Tech. Corp. v. Cisco Sys., 329 F.3d 823, 833-34 (Fed. Cir. 2003) (explaining that a patent application's statement made before the [Patent Prosecution Office] must be clear and unambiguous to constitute a limitation of a patent claim); see also Schwing GmbH v. Putzmeister Aktiengesellschaft, 305 F.3d 1318, 1324-25 (Fed. Cir. 2002).

Based on the lack of any language in the '910 Patent or in its prosecution history clearly excluding cross-linked PVP as a potential bio/mucoadhesive, the Court rejects the Defendant's proposal that cross-linked PVP cannot qualify as a bio/mucoadhesive. As a consequence, the Court adopts Plaintiff's limiting language that "Microcrystalline Cellulose ("MCC") is not a bioadhesion and/or mucoadhesion promoting agent." Thus, the Court construes the term "bioadhesion and/or mucoadhesion promoting agent" as follows: "a substance that is effective in making the active agent adhere to the oral mucosa. Microcrystalline Cellulose ("MCC") is not a bioadhesion and/or mucoadhesion promoting agent."

C. Ordered Mixture

The parties dispute the meaning of "ordered mixture" in claim 1. Plaintiff's proposed construction is based on a general scientific understanding of the term "ordered mixture," with

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[5] Defendant attempts to rely on the statutory construction principle, expressio unius est exlusio alterius, which means: the mention of one thing implies an intent to exclude similar things that were not mentioned. Thus, according to Defendant, since the '910 Patent mentions suitable bio/mucoadhesives and cross-linked PVP was omitted from that list but included as a disintegrant, there is an implied intent to exclude cross-linked PVP from the bio/mucoadhesives. But, importantly, expressio unius est exlusio alterius does not apply to non-exhaustive lists. See, generally, United States v. Cornelio-Pena, 435 F.3d 1279, 1284 (10th Cir. 2006); Singh-Kaur v. Ashcroft, 385 F.3d 293, 307 (3d Cir. 2004); Exelon Generation Co., LLC v. Local 15, IBEW, 676 F.3d 566, 571 (7th Cir. 2012).

support from various academic articles.[6] From these articles, Plaintiff concludes that an "ordered mixture" is formed when one type of particle is distributed fairly evenly on carrier particles and the two different types of particles do not need to be the same size. Plaintiff's proposed construction is: "The particles of at least one material distributed fairly evenly on carrier particles." Generally, Defendant does not dispute the foregoing principles; rather, Defendant's construction specifically describes the components of the ordered mixture as set forth in the '910 Patent, because, according to Defendant, its construction is supported by a plain reading of claim 1. Its proposal reads as: "A mixture of carrier particles and adherent particles of an active pharmaceutical agent."

At the outset, the Court finds Plaintiff's construction overly broad. Claim 1 provides:

> A pharmaceutical composition for the treatment of acute disorders by sublingual administration, comprising an essentially water-free, **ordered mixture of microparticles of at least one pharmaceutically active agent adhered to the surfaces of carrier particles**, said particles being substantially larger than said microparticles and being water-soluble, and a bioadhesion and/or mucoadhesion promoting agent mainly adhered to the surfaces of the carrier particles.

'910 Patent, col. 10, ll. 34-41 (emphasis added). Based on that language, "ordered mixture", as used in the claim, describes a certain combination of particles. Hence, giving "ordered mixture" its general scientific meaning, as suggested by Plaintiff, does not suffice here. Indeed, the Court cannot define the term "ordered mixture" in isolation, without the accompanying language of the claim. See Bd. of Regents v. BenQ Am. Corp., 533 F.3d 1362, 1368 n.5 (Fed. Cir. 2008) ("Other

[6] Plaintiff primarily supports its argument with an article by Hersey that was cited in an article by C. Nystrom and M. Westerberg, which was the foundation for the Nystrom Patent. The Hersey article describes, generally, the difference between ordered mixing and random mixing: "Ordered mixing may be considered to be different from random mixing since it does not require equally sized or weighted particles it requires particle interaction, i.e. adsorption, chemisorption, surface tension, frictional, electrostatic or any other form of adhesion." J.A. Hersey, Ordered Mixing: A New Concept in Powder Mixing Practice. 11 Powder Technology 41, 41 (1975).

claim[] [language] . . . can also be valuable sources of enlightenment as to the meaning of a claim term.")(quoting Phillips, 415 F.3d at 1314) Thus, for purposes of claim construction, the more appropriate focus is on the components constituting the ordered mixture consistent with the language of claim 1. I reject Plaintiff's construction.

Defendant's construction attempts to identify components that make up the ordered mixtures. According to Defendant, the ordered mixture consists of carrier particles and adherent particles of an active pharmaceutical agent, and may sometimes consist of a bio/mucoadhesive agent. In response, Plaintiff controverts, in its briefs filed in connection with the claim construction, that the carrier particles and the bio/mucoadhesive are the only necessary components of the ordered mixture described by the '910 Patent.

More specifically, Plaintiff contends that the '910 Patent requires the presence of the carrier particles and the bio/mucoadhesive in the ordered mixture, while the presence of the pharmaceutically active agent is optional. Plaintiff cites an embodiment from the '910 specification, which Plaintiff interprets as instructive that the active agent is replaced by the bio/mucoadhesive in the ordered mixture. Plaintiff only references one sentence from the preferred embodiment, but the full passage provides:

> In order for the pharmaceutical composition of the invention to function properly when a bio/mucoadhesion promoting agent is added thereto, this agent must be positioned at the surfaces of the carrier particles. The bio/mucoadhesion promoting agent can then be admixed to the carrier particles in several ways. In a preferred embodiment of the invention, a fine particulate quality of the bio/mucoadhesion promoting agent is mixed together with the course carrier for a sufficient time to produce an ordered mixture, where the finer particles exist as discrete primary particles adhered to the surfaces of the carrier particles. Thus, the bio/mucoadhesion promoting agent is admixed in the same way as the active compound described in European patent No. 0 324 725.

'910 Patent, col. 5, ll. 53-65.

Plaintiff insists that the active agent is not required to be in the ordered mixture, and it reasons that the embodiment teaches that the active agent can be replaced by the bio/mucoadhesive in the ordered mixture because it instructs that the bio/mucoadhesive should be mixed in the same way the active agent is incorporated into the ordered mixture in the Nystrom Patent. However, the Nystrom Patent never addresses the presence of a bio/mucoadhesive agent. The absence of that agent is, in fact, what differentiates the Nystrom Patent from the '910 Patent. Also, the Nystrom Patent does not contain any embodiments that would replace the active agent with another substance. Thus, Plaintiff's attempt to incorporate a limitation into claim 1, which it contends is based on the prior art, is not persuasive.

Additionally, Plaintiff's interpretation of the preferred embodiment from the '910 Patent is flawed. Plaintiff takes a sentence that discusses purely a method of preparation and improperly construes it to place a limitation on a claim. The passage cited by Plaintiff simply states that the bio/mucoadhesive agent can be mixed in the same manner as the active compound in the Nystrom Patent. The Court does not interpret that passage to mean that the bio/mucoadhesive replaces the active compound in the ordered mixture. Even more damning, the language of the '910 Patent belies Plaintiff's construction. As to the active agent, claim 1 clearly states that the ordered mixture **consists** of microparticles of the active agent adhered to the carrier particles. See '910 Patent, col. 10, ll. 34-41 ("ordered mixture of microparticles of at least one pharmaceutically active agent adhered to the surfaces of carrier particles . . ."). Nothing in '910 Patent describes an ordered mixture without the active agent. See Unitherm Food Sys. v. Swift-Eckrich, Inc., 375 F.3d 1341, 1351 (Fed. Cir. 2004)("[where] the plain language of a patent claim is clear and uncontradicted by anything in the written description or the figures, the district court should not rely upon the written description, the figures, or the

prosecution history to add limitations to the claim. Under such circumstances, relying on the written description and prosecution history to reject the ordinary and customary meanings of the words themselves is impermissible."). Accordingly, the Court rejects Plaintiff's contention that the active agent is not necessary to form the ordered mixture in claim 1.

Having found that the active agent is a part of the ordered mixture and that there is no dispute that the carrier particles are also a part of the mixture, the Court considers whether the bio/mucoadhesive agent is another component. A plain reading of claim 1 gives two possible interpretations for the components of the ordered mixture. The first, which is Defendant's proposed construction, includes the active agent and the carrier particles in the ordered mixture. This interpretation is supported by a close examination of the comma placement in claim 1, which can be broken into three clauses: (1) "a pharmaceutical composition for the treatment of acute disorders by sublingual administration," (2) "comprising an essentially water-free, **ordered mixture of microparticles of at least one pharmaceutically active agent adhered to the surfaces of carrier particles**, said particles being substantially larger than said microparticles and being water soluble," (3) "and a bioadhesion and or/mucoadhesion promoting agent mainly adhered to the surfaces of carrier particles." '910 Patent, col. 10, ll. 42-49 (emphasis added). Broken down in this manner, clause 2 describes all the required components to form an ordered mixture encompassed by this claim, and the bio/mucoadhesive is not listed in clause 2. Thus, when claim 1 is read in this light, the claimed pharmaceutical composition consists of an ordered mixture of microparticles of the active agent adhered to the carrier particles and, additionally, a bio/mucoadhesive.

There is, however, as proposed by Plaintiff, another interpretation of claim 1 that also makes grammatical sense. In this version, every substance listed after the "ordered mixture" is a

component of that mixture. The commas, in this interpretation, are not used to separate components; rather, they offset phrases describing the characteristics of the components. Thus, another possible way to read claim 1 is that the ordered mixture consists of microparticles of the active agent, carrier particles, and a bio/mucoadhesive.

Attempting to determine which interpretation is correct, the Court examines the '910 Abstract, which states:

> The composition comprises an essentially water-free, ordered mixture of at least one pharmaceutically active agent in the form of microparticles which are adhered to the surfaces of carrier particles which are substantially larger than the particles of the active agent or agents, and are essentially water soluble, in combination with the bioadhesion and/or mucoadhesion promoting agent.

'910 Patent Abstract. The language of the abstract mimics the language of claim 1, but one significant difference is the "and" before the phrase "bioadhesion and/or mucoadhesion promotion agent" in claim 1 is replaced by "in combination with" in the Abstract. However, this parallel language could be consistent with either of the proposed readings of claim 1 and hence, gives little guidance as to the proper interpretation.

I now turn to the preferred embodiments. A review of the '910 Patent's embodiments reveals that the ordered mixture includes the bio/mucoadhesive agent, albeit the bio/mucoadhesive is incorporated in the mixture differently. In fact, in that connection, the specification specifically discusses a preferred particle size for the bio/mucoadhesive when it is in an ordered mixture ("When the particles of this agent are to be mixed with the carrier particles to form an ordered mixture, their size suitably is then below 10 μm"). '910 Patent, col. 6, ll. 24-30. While a reading of claim 1 where the bio/mucoadhesive is not included in the ordered mixture can make sense grammatically, a claim construction that excludes a preferred embodiment is heavily disfavored. Vitrionics, 90 F.3d at 1583. And, Defendant's proposed

written construction for the term "ordered mixture" – which is only composed of the carrier particles and the pharmaceutical active agent - excludes the bio/mucoadhesive agent. As such, the Court cannot accept a construction of "ordered mixture" that does not include the bio/mucoadhesive in the ordered mixture because it would exclude the embodiments.

I further note that while Defendant does not explicitly endorse it in its proposed written construction, it concedes, in its briefing, that an ordered mixture may sometimes include a bio/mucoadhesive. Such a relaxation of construction would not exclude the embodiments, as distinguished from Defendant's proposed construction. Given this concession, the inquiry then is whether an ordered mixture, according to claim 1, must contain the bio/mucoadhesive agent. In that regard, as discussed previously, the language of claim 1 - which strongly suggests the presence of a bio/mucoadhesive agent in the ordered mixture - can be interpreted in two different ways. Thus, since the intrinsic evidence does not provide the Court with sufficient guidance on this point, consultation of the extrinsic evidence is helpful. The '910 Patent inventors authored two articles in 2003 which discuss the "ordered mixture" they invented and claimed in the patent. Specifically, they describe how to formulate an ordered mixture that includes a bio/mucoadhesive agent. For example, one of the articles explains that

> A new approach to the problem has been suggested by Bredenberg and Nystrom (2003), who found that by dry mixing, carrier particles could be partially covered with fine dry particles of a bioadhesive material to form an interactive mixture. These small, bioadhesive units could then replace the large, bioadhesive, single unit (tablet or disc). It is then theoretically possible to add the active substance to the surface of these carrier particles, resulting in ordered units comprising ***coarse particles*** carrying ***both bioadhesive component*** and ***drug.***

See Peppas Decl., Ex. 16 at ORM_00001223 (emphasis added). Based on those articles, the focus of the '910 inventors was on ordered mixtures comprised of the carrier particles, the pharmaceutical active agent and the bio/mucoadhesive.

After evaluating the intrinsic and extrinsic evidence, the Court determines that, in the context of the '910 Patent, both the pharmaceutically active agent and the bio/mucoadhesive are components of the ordered mixture for purposes of claim 1. Accordingly, the Court rejects both parties' constructions, and instead, adopts the following construction for "ordered mixture": "a mixture of microparticles of at least one pharmaceutically active agent adhered to the surfaces of carrier particles and a bioadhesive and/or mucoadhesive promoting agent."

D. Microparticles of least One Pharmaceutically Active Agent

The parties dispute the meaning of "microparticles of at least one pharmaceutically active agent" in claims 1 and 9. In general terms, the two parties differ as to whether the phrase limits the size of the pharmaceutically active agent particles in the ordered mixture. Specifically, Defendant contends that the claim language places an upper limit of 24 microns on the size of the active ingredient particles. In contrast, Plaintiff proposes a broad construction that contains no size limitation.[7]

Defendant's construction, with which I do not agree, is based on two portions of the '910 Patent's specification. The first describes the preferred and maximum particle size (10 and 24 microns, respectively) when fentanyl is used as the active agent. See '910 Patent, col. 7, ll. 4-8. Indeed, the language setting forth the maximum size of fentanyl merely illustrates the general characteristic of fentanyl, and therefore, it cannot impose a limitation on the patent claims. See Advanced Cardiovascular Sys. v. Scimed Life Sys., 261 F.3d 1329, 1339 (Fed. Cir. 2001). Moreover, the specification simply describes a preferred size for fentanyl, which is only one of

[7] Prior to the Markman hearing, Plaintiff proposed a construction for the term "microparticles of at least one pharmaceutically active agent" as "a drug, in particulate form, that is used for the treatment of medical condition. Pharmaceutically active agent induces zolpidem and its pharmacologically acceptable salts and specifically zolpidem tartrate." During the hearing, Plaintiff abandoned the second phrase from its proposed construction. Markman Hr'g Tr. 51.

many possible active pharmaceutical agents. See Id., col. 7, ll. 7-10. In general, based on the '910 Patent, the size of the active agent will vary depending on the chemical composition of the agent used in the ordered mixture. In fact, the specification of the '910 Patent details a multitude of active agents that could be used in the invention. See Id. Since the invention is not limited to use of fentanyl, the claims should not be limited to the preferred size for fentanyl particles. For these reasons, I find that this portion of the specification is simply providing an example of a preferred particle size when using a specific active agent, not limiting the scope of the invention.

Another passage from the '910 Patent specification, referenced by Defendant, discusses the invention's improvement on the prior art. Specifically, the passage states:

> The possibility to use ordered mixtures for sublingual administration, where the volume of liquid is available as solvent is limited to a few milliliters, has not been considered as a feasible approach. It was therefore unexpected that the present form of a solid dosage form preparation and administration route gives positive and useful results. In such an ordered mixture, the active agent or agents have a mean particle size below 10 microns.

Id., col. 3, ll. 44- 52. According to Defendant, this passage indicates that the inventor's own conception of the invention has a size limitation. In addition to the 24 maximum micron size limitation, Defendant also proposes that the '910 Patent contains a 10 micron size limitation. The Court disagrees. As stressed by Plaintiff, the '910 Patent already contains a specific size limitation for the pharmaceutically active agent in claim 2.[8] In that respect, the inventor expressly acknowledged the importance of a size limitation in claim 2. It follows logically that if a size limitation was necessary for claims 1 and 19, those limitations would have been included, similar to the limitations imposed in claim 2. In that connection, in the specific case of

[8] Claim 2 states, "A composition according to claim 1, wherein the microparticles of said active agent or agents have a weight based mean diameter or less than 10 μm." '910 Patent, col. 10, ll. 51- 53.

independent/dependent claims, a dependent claim places an additional limitation on the terms of the independent claim on which it depends. See generally, 35 U.S.C. § 114, ¶ 4 ("[A] claim in dependent form shall contain a reference to a claim previously set forth and then specify a further limitation of the subject matter claimed"). Based on that principle, claim 2, the dependent claim, limits the terms of claim 1 by adding a size limitation of 10 microns for the microparticles of the pharmaceutically active agent. Hence, Claim 2 would be rendered superfluous if the terms of claim 1 would also contain a numerical size limitation.

Moreover, as mentioned previously, Defendant attempts to use the above-quoted passage in the specification apparently to show the inventor's intention to limit the active agent particle size to 10 microns. However, applying that passage to limit claim 1 would violate the doctrine of claim differentiation. The doctrine of claim differentiation teaches that if different words are used in separate claims, they have different meanings and scopes. Karlin Tech., Inc. v. Surgical Dynamics, Inc., 177 F.3d 968, 971-72 (Fed. Cir. 1999). That doctrine does not apply if there is only one possible interpretation of the claim. Laitram Corp. v. Rexnord, Inc., 939 F.2d 1533, 1538 (Fed. Cir. 1991). Here, the Court cannot interpret claim 1 in such a way that would require, essentially, nullifying claim 2. Stated differently, "microparticles of at least one pharmaceutically active agent" cannot mean particles of less than 10 microns because that is precisely what claim 2 describes. Accordingly, Defendant cannot support its construction with this passage since doing so would violate the doctrine of claim differentiation.

While Defendant is mistaken in including specific size limitations in its construction that would, inter alia, make claim 2 superfluous, Plaintiff is equally mistaken in providing no limitation to the term "microparticles." Plaintiff's proposed construction of the term -- "a drug, in particulate form, that is used for the treatment of medical condition" -- ignores the meaning of

"microparticles." It is the Court's responsibility to evaluate the proposed constructions, and after evaluating all the evidence, state the meaning of the claims. Exxon Chem. Patents, Inc. v. Lubrizol Corp., 64 F.3d 1553, 1556 (Fed. Cir. 1995). The Court is not restricted by the proposed constructions. Id. I note that, scientifically, the term microparticles refers to a particle measuring between 1 and 1000 microns.[9] Defendant's expert correctly recognizes that this term distinguishes microparticles from larger (macroparticles) and smaller (nanoparticles) sized particles. See Peppas Decl. ¶¶ 86. More colloquially, the prefix "micro" refers to anything that is very small. Micro Definition, Dictionary.com, http://dictionary.reference.com/browse/micro?s=t (last visited March 27, 2014). Regardless of whether the technical or common definition is used, the prefix "micro" -- by definition – suggests the pharmaceutically active agent is restricted in size, albeit not by any specific numeric limitations.

For the forgoing reasons, the Court rejects the constructions proposed by Plaintiff and Defendant. After considering the intrinsic evidence, I adopt the following construction: "A pharmaceutically active agent, in micro-particulate form, which is used for the treatment of medical conditions."

E. Adhere to Surfaces

The parties dispute the meaning of "adhered to the surfaces." Neither party supports its construction with language from the '910 Patent. Plaintiff proposes a construction that defines "adhered" and "surfaces" according to their commonly used meanings: "active agent held at the outside part or layer of carrier particles." Plaintiff supports its proposed construction with

[9] See, generally, Bureau International des Poids et Mesures [BIPM], International System of Units, 8th Ed. (2008).

dictionary definitions of the terms.[10] Defendant proposes a construction that defines "adhere" as "to bind," which reads "binding to the surfaces." Defendant claims that its construction is supported by a passage in the Nystrom Patent that uses the language "in which the smaller particles **adhere or bind** to the surfaces of the larger carrier particles." See Nystrom Patent, col. 1, ll. 21-22 (emphasis added).

The language of the '910 gives little guidance for defining the term "adhere to surfaces." While Defendant supports its construction with a passage from the prior art, a type of intrinsic evidence, see Vitrionics, 90 F. 3d at 1583, that passage provides little guidance as to the meaning of the term "adhere." Indeed, the prior art specifies that the smaller particles "adhere or bind" to the carrier particles, see Nystrom Patent, col. 1, ll. 21-22, which signifies that these two terms may be used interchangeably in that claim. Using those two terms interchangeably does not shed light on the meaning of "adhere." Consequently, contrary to Defendant's position, "bind" does not define "adhere" in the prior art, nor does it in the '910 Patent. Additionally, as noted by Plaintiff's expert, "bind" could imply that the pharmaceutically active agent is connected to the carrier particles through a chemical reaction. See Peppas Decl. ¶ 102. The '910 Patent specification refers to the components of the invention as being "mixed" together, not reacted together. See '910 Patent, col. 6, l. 27. Therefore, Defendant's usage of the word "bind" could be incongruent with the specification of the Patent. The parties do not refer to any other intrinsic evidence to support their respective positions, and the Court has not independently found any intrinsic evidence helpful in this context.

[10] Adhere is defined as "to stick together; become fastened together. Physics. of two or more dissimilar substances in contact, to be held together by molecular forces acting at the surface." Academy Press Dictionary of Science and Technology (1992). Surfaces is defined as "[t]he outer or topmost boundary of an object." Id.

Lacking any guidance from the intrinsic evidence, it is appropriate to consult extrinsic evidence, such as dictionaries, to determine the scope of the claim. See Vitronics, 90 F.3d at 1583; Johnson, 175 F.3d at 989. According to a dictionary definition, adhere means "to stay attached; stick fast; cleave." Adhere Definition, Dictionary.com, http://dictionary.reference.com/browse/adhere?s=t (last visited March 27, 2014). I find that the ordinary meaning of the term adhere provides a clearer and more accurate picture of the interactions present between the active agent and the carrier particles. Accordingly, the Court construes the term "adhere to the surfaces" as "active agent attached at the outside part or layer of carrier particles."

F. Substantially Larger

Similar to their dispute over the construction of "microparticles," the parties disagree on whether "substantially larger" refers to a specific size limitation. Plaintiff posits that "substantially" means there is an appreciable difference between the size of the carrier particles and the pharmaceutically active agent. On the other hand, Defendant, basing its construction on the proposed size limitation for the microparticles of the pharmaceutically active agent, suggests that "larger" means greater than 24 microns. Defendant further contends that "substantially greater than 24 microns" calls for the carrier particles to be at least two times larger than the microparticles of the pharmaceutically active agent. To support that reasoning, Defendant points to a preferred embodiment (Example 1), which specifies that the carrier particle size should be between 250 and 450 microns. See Id., col. 8, l. 12. Additionally, Defendant notes that the embodiment details a preferred carrier particle size. See Id., col. 4, ll. 29-34. ("Preferably the carrier particle size is from 50 to 750 microns, and more preferably from 100 to 600 microns). Id. Combining these portions of the '910 Patent, along with their proposed size limitation for the

microparticles, Defendant concludes that "substantially larger" requires the carrier particles to be at least two times the size of the microparticles.

As previously held, Defendant's position that the '910 Patent limits the size of the active agent microparticles to 24 microns is misplaced. For similar reasons, the Court cannot accept Defendant's construction of "substantially larger" because it is based on the same flawed restriction. Furthermore, there is no specific size restriction for the carrier particles in the '910 specification. The embodiments used by Defendant to substantiate its construction are preferred sizes, not absolute limitations. Also, Defendant's reliance on the preferred embodiments to limit claim terms is strongly discouraged. Phillips, 415 F.3d at 1323. Therefore, claims 1 and 19 should not be limited to the carrier particle sizes detailed in Example 1, as proposed by Defendant. Accordingly, the Court rejects Defendant's construction of "substantially larger."

Although there is no specific numerical limitation for the size of the carrier particles, it is clear from the specification of the '910 Patent that there needs to be a significant size difference between the carrier particles and the microparticles of the pharmaceutically active agent. Plaintiff's proposed construction provides no guidance as to what "substantially" means; rather, it simply replaces the term "substantially" with "appreciably." While it is inappropriate to replace the term "substantially" with any numeric restrictions, I also find that substituting one undefined term with another does not provide further clarity. In that regard, I do not find that the term "substantially" needs to be replaced by any other terms with similar meanings. Rather, it is apparent from the context of the claim what "substantially" means - its plain and ordinary meaning suffices - and therefore, that term need not be construed. See MeadWestVaco Corp. v. Rexam Beauty & Closures, Inc., 731 F.3d 1258, 1302 (Fed. Cir. 2013)(explaining that when

there is no special definition for a term in a patent, the term should be afforded its plain and ordinary meaning).

G. Treatment

The parties dispute whether "treatment" refers to a specific outcome when dealing with an acute condition, or, "treatment" refers more generally to different forms of medical care. Plaintiff contends that "treatment" does not need construction and the Court should afford the term its ordinary meaning. According to Plaintiff, a dictionary meaning of "treatment" is "the application of medicines, surgery, psychotherapy, etc. to a patient or to a disease or symptoms." On the other side of the ledger, Defendant proposes that "treatment" means "control [the acute disorder]." Defendant supports its construction with a passage from the background section of the '910 Patent, which states: "Presently available oral, rectal or sublingual formulations have relatively lengthy onset times or erratic absorption characteristics that are not well-suited to **control acute disorders**." '910 Patent, col. 1, ll. 31-34 (emphasis added).

First, I find Defendant's proposal unnecessarily limits the claims in the '910 Patent. The passage, cited by Defendant, recognizes that the prior art did not efficaciously administer a drug to successfully control acute disorders. In that regard, the '910 Patent teaches a method of administration to improve that efficacy. Indeed, the term "control" means "to hold in check; to eliminate." Control Definition. Dictionary.com, http://dictionary.reference.com/browse/control?s=t (last visited March 27, 2014). Whether the invention would successfully "control" an acute disorder will depend on a number of factors, including the efficacy of the drug. In other words, although using the method of the invention along with an effective pharmaceutical agent may result in controlling an acute disorder, that result is not a foregone conclusion in the context of the '910 Patent; therefore, using the word

"control" limits the scope of the patent claims. See, e.g., Honeywell Inc. v. Victor Co. of Japan, LTD., 298 F.3d 1317, 1325-26 (Fed. Cir. 2002) ("the inventor did not intend to limit the scope of the claim to structures that would solve both of the prior art problems identified in the background section of the written description of the '501 patent"). Consequently, the Court rejects the Defendant's proposed construction of "treatment."

In light of the fact that the purpose of the invention is to create an effective method of administration, and the '910 Patent language does not indicate that "treatment" has any special meaning in this context, the Court finds that the ordinary meaning of the word is sufficient for its construction. However, I find the medical definition of "treatment" more appropriate than the definition proposed by Plaintiff. In a medical context, "treatment" is defined as "administration or application of remedies to a patient or for a disease or an injury." Treatment Definition. Dictionary.com, http://dictionary.reference.com/browse/treatment?s=t (last visited March 27, 2014). Using that definition, the Court construes "treatment" in Claims 1 and 9 as a pharmaceutical composition for the "administration or application of remedies for acute disorders."

H. Effective Amount

Finally, the parties disagree on whether "effective amount" requires "control" of the acute disorder. Plaintiff suggests the following construction: "An amount that elicits a therapeutic response." It supports this construction with language from the '910 Patent stating that the invention was intended to "giv[e] rise to pharmacologically effective plasma levels" of an active agent. See '910 Patent, col. 2, ll. 26–31. Plaintiff also contends that the "amount that elicits a therapeutic response" is what skilled persons would appreciate to be the ordinary meaning of "effective amount."

In response, consistent with its proposal of "treatment", Defendant construes "effective amount" as the "amount of active agent sufficient for treatment of an acute disorder is in the form of microparticles adhered to the surfaces of carrier particles." Defendant's construction includes the term "treatment," and it defines "treatment" based on its previous construction of the term ("control [the acute disorder]"). However, since the Court has rejected Defendant's proposed construction of "treatment," for the same reasons, the Court rejects Defendant's proposal with respect to the term "effective amount."

Rather, I find Plaintiff's construction sound. In support of its construction, Plaintiff cites a case where the court declined to construe "therapeutically effective amount" because its meaning would have been apparent to skilled persons in the art. AstraZenaca AB v. Dr. Reddy's Labs., Ltd., No. 05-5553(JAP), 2010 WL 1981790, at *27 (D.N.J. May 17, 2010). Like the court in that case, the Court here declines to construe "effective amount" beyond its ordinary meaning. According to Plaintiff, the ordinary meaning of "effective amount" is "an amount that elicits a therapeutic response." Considering that Defendant's own expert agrees that persons skilled in the art would recognize that "effective amount" means "an amount that elicits a therapeutic response" (See Elder Tr, 43:8-10), the Court accepts Plaintiff's construction.

CONCLUSION

The following Chart represents the Court's construction of the disputed claim terms:

Disputed Claims	Courts' Construction
Essentially water-free	A water content that does not prevent the bio/mucoadhesion promoting properties in a pharmaceutical composition for sublingual administration.
Bioadhesion and/or mucoadhesion Promoting agent	A substance that is effective in making the active agent adhere to the oral mucosa. Microcrystalline Cellulose ("MCC") is not a bioadhesion and/or mucoadhesion promoting agent.
Microparticles of at least one pharmaceutically active agent	A pharmaceutically active agent, in micro-particulate form, that is used for the treatment of medical conditions.
Adhere to the surfaces	Active agent attached at the outside part or layer of carrier particles.
Substantially larger	Substantially larger
Ordered mixture	A mixture of microparticles of at least one pharmaceutically active agent adhered to the surfaces of carrier particles and a bioadhesive and/or mucoadhesive promoting agent.
Treatment	Administration or application of remedies for acute disorders.
Effective amount	An amount that elicits a therapeutic response

DATED: 3/31/2014

/s/ Freda L. Wolfson
Freda L. Wolfson
United States District Judge